DOCUMENT RESUME

ED 230 340 RC 014 063

AUTHOR Casteel, Jim; Matthews, Doris B.
TITLE Behavioral Effects of Relaxation Training Among Rural Preadolescents.
PUB DATE Apr 83
NOTE 20p.; Paper presented at the Annual Meeting of the American Educational Research Association (Montreal, Quebec, Canada, April 11-15, 1983).
PUB TYPE Reports - Research/Technical (143) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Attendance Patterns; *Behavior Change; *Behavior Problems; *Dropouts; Junior High School Students; *Preadolescents; *Relaxation Training; Rural Areas; Urban Areas
IDENTIFIERS *South Carolina

ABSTRACT

A study at South Carolina State College examined the psychosocial effects of relaxation training on student dropout, disruptive behavior,and absenteeism of rural preadolescents between 10 and 14 years of age. Phase 1 of the study was composed of 62 preadolescents selected randomly from 167 middle school students with no previous instruction in French, who volunteered to participate in an 8-week summer program consisting of a set of 3 learning experiences. Phase 2 of the investigation was composed of 532 students (260 girls and 272 boys; 273 black and 259 white) 7th grade students in 10 public and private middle schools in a 4-county area in the midlands of South Carolina. Of the 62 students in Phase 1, 14 dropped out of the project (3 from the experimental group and 11 from the control group), supporting a hypothesis at the .05 level that students who receive relaxation training drop out at a lower rate. Additionally, the experimental group was more manageable, less overly competitive, and less likely to exhibit disruptive behavior. Although more persistent absenteeism was observed in the experimental group (contrary to expectations) the chi-square test showed that this difference was not significant. Data supported the hypothesis that there are more reported discipline problems in the control group than the experimental group receiving relaxation training. (AH)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED230340

BEHAVIORAL EFFECTS OF RELAXATION TRAINING AMONG RURAL PREADOLESCENTS

Jir Casteel
Adjunct Professor
University of South Carolina

and

Evaluator, Project Relaxation
Office of 1890 Research
Orangeburg, South Carolina

Doris B. Matthews
Professor of Education
South Carolina State College

and

Principal Investigator, Project Relaxation
Office of 1890 Research
Orangeburg, South Carolina

A Paper Presented At:
The Annual Meeting of the
American Educational Research Association
Montreal, Canada

April 11-15, 1983

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Jim Casteel and
Doris B. Matthews

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

✓ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

RC014063

Behavioral Effects of Relaxation Training Among Rural Preadolescents

Jim Casteel

Doris B. Matthews

INTRODUCTION

The study was conducted at South Carolina State College to examine psychosocial effects of relaxation training on rural preadolescents, children between the ages of 10 and 14 years of age. The paper reports the results of phase one and phase two of the research on student drop-out, disruptive behavior, and absenteeism. Also, phase two examined the specific types of behavior problems that relaxation training appear to improve.

Relaxation training teaches the child to elicit the relaxation response at will, the exact opposite of the usual bodily response when fear and anxiety arise. The concept assumes that when a person is exposed to excessively disturbing stimulation such as emotional or physical trauma, the brain has the potential to utilize natural biological processes to reduce the disturbing consequences of the stimulation.

The relaxation state is induced by a variety of techniques, some of which are appropriate for the classroom. The techniques include progressive relaxation, autogenics, breathing exercises, visual imagery, meditation, the quieting reflex, certain approaches to hypnosis, various biofeedback techniques, and some elements of behavioral therapy. For school purposes, the teacher may combine a variety of techniques such as autogenics, breathing exercises, and visual imagery.

One technique for teaching the child to elicit the relaxation response is alpha training. This is the technique used primarily in the first phase of the study. Alpha training teaches the students to

control their internal functions. The alpha state is characterized by an abundance of brain waves between 8 and 12 Hertz (cycles per second), and is associated with an alert, but non-focused, mental state. The brain waves are monitored by an encephalograph analyzer (EEG) which is used to provide feedback to the students.

Alpha training requires considerable capital investment, training of technicians, and time for individual monitoring. Phase two of the study used a large sample and depended on teachers to administer the treatment, so alpha training was impractical. Instead, phase two employed autogenics, visual imaginary, the quieting reflex, and other techniques in the form of audio cassettes. These exercises on tape can be efficiently administered to large groups simultaneously by teachers.

Since teachers report that disruptive behavior and absenteeism interfere with their teaching, the study examined the effects of relaxation training on affective behavior patterns.

Phase one of the study had the following two objectives:

a) to determine whether students who receive relaxation training drop out of classes at a lower rate than comparable students who receive no relaxation training;

b) to determine whether students who receive relaxation training exhibit fewer occurrences of disruptive behavior than students without relaxation training.

Phase two of the project re-examines objective b and two others:

c) to determine whether classes receiving relaxation training have fewer chronically absent students than classes without relaxation training;

d) to determine whether disruptive behaviors are of a less serious nature in classrooms with relaxation training than in those without relaxation training.

SURVEY OF RELEVANT LITERATURE

The limited amount of research dealing with relaxation training shows its usefulness in the educational setting for changing affective behaviors. With a few exceptions, research studies have focused on learning disabled or emotionally disturbed children. The behaviors examined in the research are common to middle school classes in general, however.

According to Lupin (1977), hyperactive children who learn relaxation procedures are less likely to cry, whine, or have temper tantrums. They are less irritable, less impulsive, and less distractible. One effect of relaxation training is that it allows children to develop a "stopping technique." As children learn more self-control, they will be able to take a deep breath and relax instead of plunging headlong without thought into difficult situations.

Braud and Braud (1974) indicated that using relaxation exercises with 22 referred children (15 hyperactive, 6 behavior problems, and 1 autistic) significantly reduced tension levels. Additionally, Lupin, Braud, Braud, and Duer (1976) in an unpublished study reported that the use of relaxation exercises with hyperactive children and their parents significantly altered some of the rated behaviors of the children. Watson and Hall (1977) in an unpublished document discussed the evaluation of 86 children (Grades 4 through 6) in regular and special education classes. The children were divided into four treatment groups which

received: (1) no treatment, (2) placebo treatment, (3) sensorimotor training, and (4) relaxation training. The researchers found that the relaxed group showed significantly reduced hyperactive behavior when compared to the no treatment group.

In a study with 36 hyperactive male children using relaxation exercises and biofeedback techniques, Rivera and Omizo (1980) measured attention to task and impulsivity. They found significant differences between the control and experimental groups, with the treatment proving beneficial for improving attention and decreasing impulsivity. Similar results were noted by Dunn and Howell (1982) in research with 10 hyperactive males. By examining pre- and posttest scores in the study, one can see that relaxation training increased accuracy and attending behavior and decreased body movements while engaged in a quiet activity.

Relaxation training is effective with hyperactive children who are normally treated by stimulant drug therapy (Braud, 1978). Stimulant drugs are effective in decreasing overactivity and increasing attention span, but are less effective than relaxation training in the decrease of irritable, aggressive, explosive, or emotional behaviors that tend to remain after the symptoms of hyperactivity are no longer evident (Braud, 1978; and Denhoff, David, and Hawkins, 1971).

Since the literature shows limited evidence of controlled group research with relaxation procedures and average learners in the school setting, the study which follows should be of interest to administrators, teachers, and counselors in the middle school.

DESCRIPTION OF POPULATIONS AND SAMPLES

The sample for phase one of the study was composed of 62 preadolescent boys and girls, aged 10 to 14, who were selected randomly from a

group of 167 middle school students with no previous instruction in French who volunteered to participate in an eight-week summer program consisting of a set of three learning experiences.

The population of phase two of the investigation was seventh grade students in 10 public and private middle schools in a four-county area in the midlands of South Carolina. The schools ranged from urban to rural with the socioeconomic levels of the parents from low to middle class.

The sample consisted of 532 students (260 girls and 272 boys) of which 273 were black and 259 white. Students were selected by sampling two intact classes of seventh graders from each school prior to the beginning of school. These two classes were selected by the principal so that the two groups would have similar class schedules. At the time of selection, after schedules were constructed but prior to the opening of school, the classes were combined and two new classes were formed randomly from the combination. Class sizes depended upon the original two classes and ranged between 20 to 35 students.

One of the two classes was selected randomly as the experimental, or treatment group. The other was the untreated control group. No students or teachers were aware of the pairing of classes since the information was known only to the principal and counselor in the school. Teachers were assigned randomly to the two groups by the principal. The experimental group was informed that they would participate in a stress management program as part of the regular curriculum. Parents signed consent forms for their children to participate in the program.

The sampling plan achieved a large sample, blind to the existence and purpose of the study, assigned to directly comparable pairs of classes.

TECHNIQUES

As soon as the students in phase one had been selected, they were assigned randomly to two groups, a treatment group and a control group. The treatment group participated in a one-week relaxation training session utilizing autogenic exercises, an encepolograph analyzer (EEG) and other biofeedback instrumentation aimed at training the child for willful elicitation of the relaxation response while the control group was engaged in instant drama with video tape serving as instant feedback. After the one-week special sessions, the six-week French instructional period began. The two teacher-aide teams were assigned randomly to the two groups. To control for differential effect of the instructional team, the teams were reversed halfway through the instructional sequence. The only difference between the instruction in the two groups was that the experimental group participated in relaxation training for 10 minutes each day immediately after the evaluation period for the previous day's learning and before the instruction for the day. The final week, not included in the experimental phase, was a reversal of the special one-week sessions.

The second phase of the study uses a split-plot factorial design in which the plots are schools. Differences among the schools on any dependent variable are of no interest in testing the hypotheses.

Two groups, one experimental and one control, were formed in nine schools and four groups, two experimental and two control, in one school. Students are blind to their participation in a study. The students in the untreated control group are unaware that they are under observation. Since the two groups in each school were formed randomly out of the same convenience sample, they clearly were comparable prior to the study. Any

difference observed at the study's end must be attributed to the experimental intervention or contamination from a confounding variable. Every reasonable measure available to the researcher has been used to minimize confounding effects.

The study occurred during the first semester of the school year and lasted for 13 weeks. The children in the experimental group participated in relaxation exercises for approximately 15 minutes at the beginning of each school day in homeroom or social studies period. The teacher, trained before school opened in a three-day workshop, followed a schedule of relaxation exercises developed especially for middle school students by the principal investigator.

When teachers referred any of the students in the sample to the principal's office for discipline, copies of the referral slips were given to the principal investigator. The infractions were tallied according to the following categories: (1) cutting class; (2) leaving campus without permission; (3) loitering in unauthorized areas; (4) smoking in unauthorized areas; (5) distributing unauthorized materials; (6) persistent disobedience; (7) excessive noise/attention getting; (8) persistently disturbing another student; (9) disrespect/insubordination; (10) possession/sale/consumption of drugs or alcohol; (11) threatening/intimidation of staff; (12) theft/cheating/gambling; (3) fighting/physical abuse of students or staff; (14) vandalism; (15) habitually failing to do homework; and (16) habitually failing to do classwork. Discipline referral slips provided the data to measure the total number and categories of infractions for children in both the experimental and control groups.

RESULTS

Results of a Study of Student Retention in Phase One

Of the 62 students who enrolled in the French class, 14 dropped out of the project before its end. While parents were urged to encourage their children's attendance, no extraordinary effort was made to ensure the students' continued enrollment. Care was taken to assure that the two groups were treated alike in the discouragement of dropouts. Of the 14 dropouts, only 3 left the experimental group and one of these was hospitalized and could not complete the lessons. Eleven students dropped out of the control group. Table 1 reports the results of a test of the difference of two independent proportions in order to test the following research hypothesis: Students who receive relaxation training will drop out of the French classes at a lower rate than comparable students who receive no relaxation training. The hypothesis is supported at the 0.05 level of significance.

Results of the Investigation of Disruptive Behaviors in Phase One

As soon as the French lessons began, there was evidence that the experimental group, which received daily relaxation training, seemed more manageable, less overly competitive, and less likely to exhibit disruptive behaviors. Eight types or examples of disruptive behavior were listed for the subject: (1) difficulty concentrating for any length of time; (2) overactivity, restlessness, and/or continual shifting of body positions; (3) disturbing other children by talking, teasing, provoking fights, or interrupting; (4) moving inappropriately out of seat; (5) seeking attention from peers; (6) responding inappropriately to teachers; (7) giggling or laughing inappropriately; and (8) uttering nonsense syllables and/or babbling to oneself. An observer counted

TABLE 1

RESULTS OF THE FISHER EXACT TEST OF THE DIFFERENCE OF TWO INDEPENDENT PROPORTIONS OF STUDENTS WHO DROPPED OUT OF FRENCH CLASSES BEFORE THE PROJECT'S END

Total number of students	62
Total number of dropouts	14
Proportion of dropouts	0.23
Proportion remaining	0.77
Control Group	
Number of students	31
Number of dropouts	11
Proportion of dropouts	0.355
Experimental Group	
Number of students	31
Number of dropouts	3
Proportion of dropouts	0.097
Fisher exact probability[a] that the two proportions do not differ	0.017*

*Significant at the 0.05 level

[a]Ferguson (1971), Chapter 22, Section 11.

the incidence of such behaviors, without regard to the specific type, within a two-minute interval. Observations continued for five consecutive two-minute periods. The total incidences of disruptive behavior were determined by summing the frequency of such behavior in the five time intervals. The same observer made all observations using the same observation form. The two classes were observed on the same day during periods in which the children participated in similar activities. These pairs of observations were used to test the following research hypothesis: Middle school students who receive daily relaxation exercises will tend to exhibit fewer incidences of disruptive behavior than comparable students without relaxation training. The Wilcoxon matched-pairs signed-ranks test (Ferguson, 1971) was used to test the null hypothesis. The test statistic, W+, was found to equal 0.00 and therefore was significant beyond the .005 level of significance. In no pair of observations was the number of disruptive behaviors for the control group lower than that for the experimental group. Refer to Table 2 for details of the statistical test.

Results of the Study of Absenteeism in Phase Two

Students were considered to be chronically absent if they missed more than 10% of the class days during the 13 week period. Table 3 reports the number of chronically absent students in the control and experimental groups. Although more persistent absenteeism was observed in the experimental group (contrary to expectations) the chi-square test shows that this difference is not significant. The data do not support the hypothesis.

TABLE 2

REPORT OF FREQUENCY OF DISRUPTIVE BEHAVIORS FOR THE EXPERIMENTAL AND CONTROL GROUPS WITHIN ELEVEN OBSERVATIONS OF TEN MINUTES EACH

Frequency of Disruptive Behaviors

Observation	Experimental	Control	Difference	Signed Rank
1	5	15	-10	- 6
2	7	13	- 6	- 4
3	1	8	- 7	- 5
4	5	22	-17	-10
5	4	6	- 2	- 1
6	9	28	-19	-11
7	14	27	-13	- 8
8	10	15	- 5	- 3
9	3	15	-12	- 7
10	17	20	- 3	- 3
11	13	27	-14	- 9

The sum of positive signed ranks, W+, equals 0. Such a statistic is significant beyond the .005 level of significance.

TABLE 3

Total Frequencies of Persistently Absent Students and a Chi-Square Test of Significance

Control n=259	Experimental n=273	Chi-Square
27	32	0.209

*expected cell sizes were adjusted for the different sample sizes

Results of the Study of Discipline Infractions in Phase Two

Table 4 reports the frequencies of discipline infractions for the control and experimental groups and the results of a chi-square test of significance between the two groups. The chi-square value of 4.9785 is significant at the .05 level of significance with one degree of freedom, indicating that the number of discipline problems differ between the control group and the experimental group. The data support the hypothesis that there are more reported discipline problems in the control group than in the experimental group.

These data are further separated into sixteen specific discipline violations in order to determine exactly which types of unacceptable behavior have been affected by the relaxation training. Five of these infractions had no incidents in either the experimental or control groups. The data for the other eleven violations are reported in Table 5. Chi-square tests were conducted for five of these eleven areas and are also reported in Table 5. Of the five behavior types tested, only the discipline problem of "fighting/physical abuse of students/staff" has a

TABLE 4

Frequency Table and Chi-Square Test of Discipline Infractions Between the Control and Experimental Groups

Infraction	Control n=259*	Experimental n=273*	Chi-Square
Total of discipline infractions reported to school office	131	103	4.9785 **

** indicates a significant chi-square at the .05 level of significance

* expected values were adjusted to compensate for the differences in cell sizes

TABLE 5

Frequency Table and Chi-Square Tests of Discipline Infractions by Category Between the Control and Experimental Groups

Infraction	Control n=259*	Experimental n=273*	Chi-Square
cutting class	0	1	**
loitering in unauthorized areas	0	5	**
persistent disobedience	37	28	1.762
excessive noise/attention getting	14	14	0.019
persistently disturbing another student	14	15	0.002
disrespect/insubordination	19	17	0.240
threatening/intimidating staff	4	3	**
theft/cheating/gambling	0	1	**
fighting/physical abuse of students/staff	32	14	8.021 ***
habitually failing to do homework	6	3	**
habitually failing to do classwork	5	2	**

* expected values were adjusted to compensate for the differences in cell sizes

** chi-square values were not computed where expected cell sizes were less than 5

*** indicates a significant chi-square at the .0102 level of significance.

significant chi-square at the .0102 level of significance. An alpha level of .0102 is used in this case to produce a family-wise error rate of .05 for the five tests. The control group had a higher number of instances of fighting than did the experimental group. This result supports the hypothesis that students with relaxation training will exhibit fewer instances of explosive types of behavior compared to students without training, since the "fighting" category is the most explosive of the discipline information.

CONCLUSIONS

The changes in affective behaviors in phase one of the study were so noticeable in the experimental group when compared to the control group that other persons working in the school other than the project staff commented about them. The treatment group came to school earlier, missed fewer days, and showed more self control at recess than in the halls (variables not measured in the study). It was not surprising then that analysis of the data on retention and disruptive behaviors showed significant differences between the two groups. The experimental children appeared to be less competitive, showed better attending behaviors, and, in general, were more manageable. The results of the study agreed with other findings in the literature (Luthe, 1969; Sellers, 1974, and Palmeri, 1980) related to affective changes.

Phase two of the project has found relaxation exercises to be a useful tool in teaching students to relax. The results of the chi-square tests support the hypothesis that there are significantly fewer discipline problems among students who receive the relaxation training than among those who do not receive the training. Apparently, the relaxation program decreases the number of incidents of disruptive behavior and

especially of explosive behavior such as fighting. This finding indicates that students receiving relaxation training are less likely to exhibit types of behavior which are considered unacceptable. One possible interpretation of this finding is that students receiving relaxation training remain relatively calm throughout the day. No significant difference was found in chronic absenteeism probably since such absences are largely controlled by outside forces related to health and family.

The investigation, as usual, raised more questions than were answered, and, therfore suggests more research. Further exploration is needed in the area of locus of control and self-concept. Additionally, cognitive behaviors such as higher order skills need investigation. Relaxation training tends to produce a brain wave state known as alpha which is associated with open-focus attention, the state needed for problem solving and creative thinking. Such hypotheses seem more tenable to the researchers after the present investigation than it would have appeared prior to the study and plead for rigorous tests.

References

Braud, L. W. The effects of frontal EMG biofeedback and progressive relaxation upon hyperactivity and its behavior concomitants. Biofeedback and Self-Regulation, 1978, 3, 69-89.

Braud, L. W., & Braud, W. G. Further studies of relaxation as a Psiconducive state. Journal of American Society of Psychical Research, July, 1974.

Denhoff, E., David, A., & Hawkins, R. Effects of dextroamphetamine on hyperkinetic children, a controlled double blind study. Journal of Learning Disabilities, 1971, 4, (a), 491-498.

Dunn, F. M., & Howell, R. J. Relaxation training and its relationship to hyperactivity in boys. Journal of Clinical Psychology, 1982, 38 (1), 92-100.

Ferguson, G. A. Statistical analysis for psychology of education, 4th Edition. New York: McGraw Hill Publishing Co., 1975.

Lupin, M. Peace, harmony, awareness: a relaxation program for children. Hingham, Ma.: Teaching Resources Corporation, 1977.

Lupin, M., Braud, L. W., Braud, W.G., & Duer, W. F. Children, parents, and relaxation tapes. Academic Therapy, 1976, 12 (1), 105-113.

Luthe, W. Autogenic therapy, Vols. I-IV. New York: Grune and Stratton, 1969.

Palmeri, J. J. Relaxation and cognitive coping statements as supplemental remedial interventions for learning problems in children. (Doctoral dissertation, Hofstra University, 1980). Dissertation Abstracts International, 1980, 40, 5796 B. (University Microfilms, No. 8012855, 113).

Rivera, E., & Omizo, M. M. The effects of relaxation and biofeedback on attention to task and impulsivity among male hyperactive children. The Exceptional Child, March 1980, 27 (1), 41-51.

Sellers, T. G. and Poling, D. R. Can intelligence by taught? Bloomington, Indiana: Phi Delta Kappa Educational Foundation, 1973.

Watson, D. L., & Hall, D. L. Self-control of hyperactivity. Sacramento, Calif.: California State Department of Education, July 1977. (ERIC Document Reproduction Service No. Ed 148 093).